

# NewScientist

WEEKLY 8 October 2011

*Special  
issue*

# TIME

THE MOST  
MYSTERIOUS  
DIMENSION  
OF ALL

No2833  
£3.50 US/CAN\$5.95



News, ideas and innovation  
[www.newscientist.com](http://www.newscientist.com)  
The best jobs in science

Our experience of time owes as much to cultural invention as human cognition



VERA DA SILVA SINHA

## A life without time

WE ALL, regardless of our cultural background, experience time. But is everyone's concept of time the same? Anthropologists have found that ways of organising and naming time intervals vary greatly between human groups. The minutes and hours used for segmenting and measuring clock time, natural as they may seem to us, are in fact inherited from the ancient Babylonians, who first invented this notation. And different cultures have different calendars. Nevertheless, orienting ourselves in time using hours, days and months appears as fundamental to our mental and social lives as orienting ourselves in space using landmarks, routes and distances.

In fact, space and time seem to be closely related domains of human cognition, if the way we talk about them is a reliable guide. We speak of events occurring in relation to temporal landmarks, in the same way that we locate objects in relation to spatial landmarks. So an event can take place in the summer or on Friday.

We also think and speak of events, and the people that experience them, as moving on a timeline, for example "winter is approaching" or "she is coming up to her exams". Such metaphorical mapping of spatial language to that of time can be found across the languages of the world. This has led cognitive scientists to claim that using spatial concepts to talk and think about time is a universal characteristic of the human mind. But these claims are challenged by research carried out with an indigenous

Amazonian community by Wany Sampaio and Vera da Silva Sinha from the Federal University of Rondônia in Brazil, Jörg Zinken at the University of Portsmouth, UK, and me.

The Amondawa (pictured), who live in a remote, forested area of the Brazilian state of Rondônia, were first contacted by the outside world in 1986. Traditionally they have lived by small-scale farming, hunting and fishing. Like many other Amazonian languages, theirs has a very restricted number vocabulary, with only four numbers, so the lack of clock time and a numerically based calendar is hardly surprising.

For the Amondawa, time during the day is marked by the sun's position in the sky, and by activities such as rising, eating and working that habitually take place at different times. With no words for month and year, longer intervals are named as subdivisions of the dry and rainy seasons. The language has no abstract term for time, and when asked to translate the Portuguese word *tempo*, speakers use the word *kuara*, or sun.

Neither do the Amondawa celebrate

**"Using spatial concepts to talk and think about time may be a universal characteristic of the human mind"**

**May fly lifetime**

2  
hours

birthdays. People pass through named life stages, taking on a new personal name based on gender and clan with each transition. When a new baby is born, for example, it will take the name of its older sibling and that child will adopt a different name.

We tried to elicit space-time metaphors such as "the dry season is coming" from Amondawa speakers, but found that they do not use them. This is not because they do not comprehend the meaning of such expressions, since bilingual Amondawa speakers readily understand space-time metaphors in their second language, Portuguese, and the Amondawa language itself uses quasi-metaphoric expressions such as "the path goes to the riverbank". And it is not because the language grammatically precludes using spatial terms in conjunction with time-interval nouns. Amondawa speakers will happily talk about movement of the sun, *kuara*, while rejecting the same word when speaking of the temporal "motion" of the dry season (*Language and Cognition*, vol 3, p 137).

How should we interpret these findings? Our hypothesis is that, because they have no calendar or other number-based time-measurement system, the Amondawa have no corresponding concept of "abstract" time. Their time intervals are structured around the rhythms of the natural and social world, rather than being segments of a calibrated timeline independent of and superimposed upon these worlds. Lacking an event-independent time, the Amondawa do not metaphorically "move around" in it, or "place" events in it, which accounts for the absence of space-time metaphors in the language. Amondawa time, to put it another way, is identical to the events and routines of everyday life, rather than being, as it is for us, a "technology of the mind" used for organising those events and routines.

Amondawa time strikes us as odd and remarkable. But taking a longer view of human culture, it is we who are exceptional. Small-scale societies, organised around face-to-face encounters, have been around much longer than hierarchically structured, socially differentiated ones. Traditional societies can manage without the cognitive technologies of calendar and clock. Our experience of time, it seems, owes as much to cultural invention as to the workings of the brain. ■

Chris Sinha is a psychologist of language at Lund University in Sweden